

The Impact of Financial Crisis on Earnings Management in Nonfinancial Listed Firms: Evidence from Jordan

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Abstract

This paper studies earnings management in Jordan during the global financial crisis. It addresses mainly the question of whether or not financial crisis has an impact on discretionary accruals, using the modified Jones model (1995) for estimating discretionary accruals. By applying Ordinary Least Squares regression model on a sample of 71 nonfinancial listed firms during the period of 2005-2012, I find a conclusive evidence that Jordanian nonfinancial listed firms did not engage in a greater level of earnings management during the financial crisis period. In addition, larger firms are less involved in earnings management practices compared to smaller firms. Moreover, the results suggest a negative significant impact of operating cash flow on discretionary accruals, while it fails to connect current year losses with discretionary accruals. However, the findings indicate that firm's leverage is positively and significantly associated with discretionary accruals. Overall, the empirical results provided evidence that earnings management practices in Jordanian nonfinancial sectors are relatively small, even smaller in services sector, which raise questions about the validity of the modified Jones model and whether or not different models (such as Deangelo, 1986) should be used in future studies regarding earnings management.

Keywords: discretionary accruals, earnings management, global financial crisis, modified jones model

1. Introduction

1.1 Earnings Management Definition, Incentives and Techniques

There are several definitions for earnings management. Schipper (1989) defined it as an intentional intervention in the external financial reporting process in order to obtain private gain. Likewise, Healy and Wahlen (1999) stated that earnings management take place when managers use their diligence in financial reporting process and in altering financial reports to hide the firm's underlying economic performance from shareholders or to affect the outcomes of the firm's contracts that depend on the reported accounting numbers. Similarly, Aini et al. (2006) concluded that earnings management happens in firms where managers use discretionary accruals in an attempt to present a more favorable financial image of the firm's performance. In any case, managing earnings is essentially unobservable.

Managers intervention in the reporting process can occur through many ways, one can take the advantages of flexibility allowed in International Financial Reporting Standards (IFRS) to change reported earnings as this enables calculating profit and other financial performance measures using different accounting methods (Makar et al., 2000). Despite the benefits; managers have incentives to withhold information because lack of information hinders the ability of the capital and labor markets to monitor managers effectively. Moreover, managers may use accounting steps that boost the reported earnings to hide the negative projects' outcomes (Chung et al., 2005). Managing earnings has been an interesting subject that researchers dealt with. Prior studies have used variety of terms synonymous with earnings management, such as: accruals management, creative accounting, manipulation of accounts, earnings manipulation, earnings quality, income smoothing, cooking the books, etc.

In the accounting literature, earnings management behaviors have been widely explained using both the "big bath" and "income smoothing" practices. According to Healy (1985), the "big bath" occurs when the firm's current period earnings are unexpectedly low - depriving managers from receiving a bonus or meet pre-specified targets - managers will clear off future potential expenses by matching additional discretionary charges to current

earnings, worsening the reported financial outcome. On the other hand, the "income smoothing" reflects manager's tendency to select among different accounting procedures that increase (decrease) reported earnings when unmanaged current period earnings are below (above) pre-specified target earnings. Therefore, Income smoothing has been linked to dividend stability and higher share prices, reflecting manager's efforts to signal positive private information about the firm's future performance.

Lastly, the quality of financial reports has been of great interest after revealing a series of corporate scams like Enron (2001) and WorldCom (2002). More recently, the academic researchers paid attention and considered earnings quality among the most important issues to investigate, especially after the financial crisis and the adoption of IFRS (Kousenidis et al., 2013). The likelihood of managers behaving opportunistically to achieve their particular interests and/ or achieve firm's targets through manage earnings probably increases during the financial crisis period. However, this opportunistic behavior during the financial crisis period may be minimized. Kousenidis et al. (2013) concluded that earnings management declines during the financial crisis period, and as investors expect earnings management to be higher, motives to manage earnings are lower.

1.2 Financial Crisis Definition, Timeliness and Impact

Many economists and researchers define a financial crisis as any of a wide different situations that leads to a significant drop in the nominal value of some financial assets. Trombetta and Imperatore (2014) defined a financial crisis as a sudden or incremental obstruction in the financial market's operations, accompanied with increasing uncertainty among creditors and investors regarding the fundamental values of assets, which leads to a higher fluctuations in the market prices of assets. During such situation of uncertainty, lenders and investors progressively lose confidence in the accuracy of the information they have about borrowers. Managers may exploit the increased opportunity during financial crisis periods to increase the financial reporting quality to attract more investors and alleviate the financial crisis effects.

Financial crisis began with a recession in the U.S. subprime mortgage market in 2007, and grew into a global banking crisis with the plunge of the investment bank Lehman Brothers on September, 2008. The crisis was nevertheless followed by a global economic recession. Mollik et al. (2013) illustrated that the global financial crisis started in the U.S. market in mid-2007, but since the second quarter of 2008, its impact has continued to spread throughout the world. Consistently, many studies defined the period of global financial crisis between (2008-2009), whereas 2006 and 2007 are considered as the pre-crisis (see for example, Mollik et al., 2013; Kousenidis et al., 2013 and Costa, 2016).

It is well-known that economic turbulence affects the operations, financial transactions and thus the earnings of all the firms in the economy. Economic downturn having negative effect on the earnings form a strong motivation for the managers to manipulate earnings upwards in order to report positive earnings, avoid reporting losses/decreased earnings and meet or beat analyst's expectations (Chen et al., 2010). debt covenants form another strong reason for managerial earnings manipulation during the economic downturn. Firms with limited scope to avoid debt covenant violations may purposefully report losses by managing earnings downwards to obtain concession from lenders. Although banks (lenders in general) have the right to reject concession and insist on liquidation for debt recovery, they usually prefer debt restructuring by making concessions, giving more time for principal and interest payment, or lowering the interest rate, since firm's assets will likely have a low realizable value during economic downturn (Shleifer & Vishny, 1997). Another strong incentive for managers to manipulate earnings downwards during the crisis period is that financially troubled firms are likely to get financial aid from the government. To qualify for such government support, firms may indulge in income-decreasing earnings management. According to Bartram and Bodnar (2009), the financial crisis associated with inadequate accounting practices has weakened investor's confidence and hurts financial companies. Crisis being temporary in nature, earnings reported during such period is of less value relevance (Ball & Shivakumar, 2005). Therefore, the demand for high quality audit associated with high quality information has raised due to the financial crisis.

1.3 Institutional Environment and Corporate Ownership in Jordan

There is a priori cause to doubt a regular manipulation of earnings in Jordan, due to the nature of ownership structure of firms listed on Amman Stock Exchange (ASE). Jordanian listed firms are mostly characterized by highly concentrated ownership structures, which allows shareholders with large ownership stake to exercise control over the firm (Tayem, 2015). Therefore, managers of such firms have stronger incentives and greater power to act opportunistically for personal gain, and tend to get involved in unprofitable projects, over investments and misuse the funds (Jensen, 1986). They use flexible accounting principles to manipulate earnings. On the other hand, Jordan suffers from inconsistency in the prices of food and oil, the global financial crisis

effect can be primarily seen through Jordan's high reliance on food and fuel imports. Moreover, financial crisis has harmed the tourism, decreased the foreign aids and influenced Jordanian overseas workers (Habibi, 2009). Thus, it is vital to examine earnings management practices during the global financial crisis in Jordanian nonfinancial listed firms, as there is a little known about financial crisis and its relation to earnings management in the context of small emerging economies, such as Jordan. Most studies focus on the U.S., Europe, Asia and other developed markets, in addition, studies on the link between financial crisis and earnings management reported mixed results (see for example, Bartram & Bondar, 2009; Mollik et al., 2013; Filip & Raffournier, 2014; Cimini, 2015; Xu & Ji, 2016; Costa, 2016 and Kumar & Vij, 2017). This paper sets out to examine the behavior of firm's earnings management during the global financial crisis (2008-2009) in the context of nonfinancial firms listed in emerging markets, taking ASE as a representative of these markets (Note 1). The results of this study could be helpful in assessing the quality of the reported financial information during financial crisis periods.

To my knowledge, this paper is the first to address the relationship between earnings management and financial crisis in the context of Jordanian nonfinancial listed firms. This study will shed a light on earnings management in developing countries, namely in Jordan, it also helps ensure that firm's financial status and its operating performance are reasonably reported by ASE listed firms management.

2. Literature Review and Hypotheses Development

2.1 Related Literature

Numerous studies tried to link earnings management to a different set of explanatory variables, they have shown wide set of variables for earnings management determinants, incentives and constraints, such as firm performance, dividends policy, surplus free cash flow, ownership structure, managerial ownership, board of director's characteristics, audit committee characteristics, corporate governance mechanisms, Chief Executive Officer role duality, investor protection, voluntary disclosure, among others (see for example, Jensen, 1993; Yermack, 1996; Peasnell et al., 2000; Klein, 2000; Xie et al., 2003; Bedard et al., 2004; Abbott et al., 2004; Yang & Krishnan, 2005; Lin et al., 2006; Naveen et al., 2007; Lin & Hwang, 2010; Al-Fayoumi et al., 2010; Ghosh et al., 2010; Azzoz & Khamees, 2016; Abbadi et al., 2016; Al-Mohareb & Alkhalaileh, 2019 and Dayak & Al-Mughrabi, 2020). As a result of the global financial crisis, the interest of studying earnings management has been increased lately. Several researches around the world have addressed the topic of the global financial crisis (2008-2009) and its effects on different financial and accounting subjects. Even though extant research examines earnings management forecasts and constraints extensively, the relation between financial crisis and the quality of financial statement in emerging markets is not thoroughly examined.

This paper relates mostly to a study by Mollik et al. (2013). Using a sample of 149 firms publicly traded in Australia between 2006 and 2009 and using absolute performance-adjusted discretionary accruals from the modified Jones model as a proxy for earnings management, the authors examine Australian firms' earnings management during the global financial crisis. Specifically, the authors focus on whether or not there is any industry effect on firm's earnings management. They also analyze whether cash flow from operations, firm size and leverage influence reporting practices, the authors find that (1) firms' earnings management is significantly influenced by their industry classification. (2) smaller firms have a lower level of income-decreasing earnings management. The authors state that a lot of firms experience a systematic reduction in returns during financial crisis, and majority of them report a fall in earnings or losses. Therefore, the start of a financial crisis may trigger or magnify managers incentives to engage in earnings management, so they can hide their poor managerial performance behind the macroeconomic shocks to justify the reduced earnings (or losses). The authors concluded that during the global financial crisis Australian firms did engage in a greater level of income-decreasing earnings management.

Also, related to this paper is a study by Xu and Ji (2016). They run an Ordinary Least Squares (OLS) regression on a sample of 1392 firm-year observations from China's top listed firms (in terms of total assets) to examine earnings management of Chinese firms during the global financial crisis, using both accruals-based and cash flow-based as a proxies for earnings management. Their results show that top Chinese listed firms engaged in earnings management during the global financial crisis. In addition, the results demonstrated that earnings have been manipulated upwardly in some industries, while other industries engaged in earnings-reducing activities; which implies that the impact of global financial crisis varies among sectors and industries. Moreover, the results indicated that firm characteristics such as leverage, growth, profitability and size affect the earnings management practices in China.

In the context of developed countries, Kousenidis et al. (2013) employ European union data of 552 nonfinancial listed firms from Greece, Italy, Portugal, Ireland and Spain over the period 2008-2011, to investigate the impact

of the global financial crisis on earnings quality. They find that the majority of firms prefer high earnings quality, which attributed to the firm's dependence on external funding and its efforts to improve the quality of its financial reports to attract potential investors and mitigate the financial crisis effects. However, the results report a reduction in earnings management after financial crisis. These findings are consistent with Iatridis and Dimitras (2013) whose state that even being audited by the Big 4, firms tend to manipulate earnings. Moreover, they find that Portugal, Italy and Greece have a stronger tendency towards earnings management. Although Filip and Raffournier (2014) believe that investigating the European union as a whole is sturdier than investigating country by country, Cimini (2015) uses an event study methodology to calculate and compare country by country abnormal accruals for a sample of 1692 nonfinancial firms (11844 firm-year observations) belong to the European union during the period of 2006-2012, assuming that 2008 to 2012 are crisis years. He finds that earnings management practices decreased during the crisis period comparing to the period before the crisis, he attributed the reduction in the abnormal accruals during the financial crisis to the higher audit quality and, therefore, a high quality of financial reporting in the period of financial crisis. Also, the results documented that the falsification in the large majority of the European countries are decreased after the burst of financial crisis. In conclusion, he states that when studying the impact of financial crisis on earnings management, the results vary depend on whether we are studying financial or nonfinancial firms.

More recently; Costa (2016) investigates the impact of financial crisis on earnings management (using abnormal accruals as a proxy), for a sample of 2404 nonfinancial listed firms in 25 European union countries over the period of 2006-2014. She finds that firm size, sales growth and dividends payout are negatively correlated with discretionary accruals in the financial crisis period and financial non-crisis period, she interpreted this result as that these variables are not incentives for earnings manipulation neither in financial crisis nor non-crisis period. Furthermore, consistent with Cimini (2015), she states that the nonfinancial listed European firms have witnessed a reduction in earnings management during the periods of financial crisis comparing to financial non-crisis period, in contrast, more leveraged firms tend to manipulate earnings more in financial crisis period, which can be attributed to the lower quality of firm's reported earnings in financial crisis period.

Studies from developing markets have examined earnings management during the financial crisis period. For example, Kumar and Vij (2017) study the attitude of earnings management during the global financial crisis (2008) and compare it with period before and after-crisis for a sample of 356 Indian listed firms selected from S & P 500 index for the period of 2007-2012. As for their methodology; they used an OLS regression model to examine earnings management, Furthermore, they classify firms into two groups: the first group is firms with positive discretionary accruals and the second one is firms with negative discretionary accruals. Using discretionary accruals (obtained from the modified Jones model) as a proxy for earnings management, they document a reduction in earnings management during the crisis period for both groups. While they fail to find a conclusive evidence for firms in the first group of their classification, but they find an increase in earnings management for the firms in second group in post-crisis period. Overall, the results of their study show a high level of earnings management in the sampled firms during both periods (pre-crisis and post-crisis periods) and a significant decrease during the crisis period.

In the context of the Jordanian market, various studies tried to link the global financial crisis to different economic and accounting subjects, they have used wide set of variables, such as: economic growth (Gross Domestic Product), remittances, unemployment, poverty, tourism, foreign investments, foreign grants, inflation, profitability, liquidity, etc. (see for example, Habibi, 2009; Alnajjar et al., 2010; Jaber & Al-khawaldeh, 2014 and Alkhalailah, 2016).

As far as I know, this paper is the first to examine earnings management behavior during financial crisis in the context of Jordan's stock market, it aims at investigating whether or not earnings management practices have been influenced by the global financial crisis. Further, it also aims at assessing the impact of industry effect, operating cash flow, current year losses (if any), firm size and leverage on earnings management for nonfinancial firms listed on ASE.

2.2 Hypotheses Development

In this section, the motive behind selecting the variables in the study will be provided, the relation between each chosen variable and earnings management will be addressed briefly.

2.2.1 Financial Crisis

It may seems weird for firms to manipulate earnings during financial crisis, because there is less earnings in general. Willekens and Bauwhede (2003) findings imply that managers tend to manipulate earnings less in times of financial crisis, because involved authorities and regulatory bodies impose more strict monitoring approach

and closely regulate firms during times of financial crisis, than in times of nonfinancial crisis. Therefore, firms may be less likely to engage in earnings management practices during financial crisis periods. Yet some executives find it a great opportunity to manage earnings in their favor, aiming to obtain personal gain, conceal some activities and/or mislead shareholders about the firm's financial performance. However, consistent with Willekens and Bauwhede (2003), this study argues that financial crisis has a positive impact in lessening earnings management. Thus, the following hypothesis is formulated:

H01: There is a significant negative association between financial crisis and earnings management.

2.2.2 Operating Cash Flow

It is expected that more cash flows from operating activities reduces earnings management. Leuz et al. (2003) suggest that managers are willing to take advantage of the accounting discretion granted to them, in order to hide the impact of economic shocks on the firm's operating cash flow and give a brighter picture of firm's performance. Managers may also speed up the recording of future revenues or postpone reporting current costs in their reports, with a view to alleviate economic shocks' impact and/or conceal the firm's current poor performance. Moreover, they find that accounting accruals smooth cash flow shocks and result in a negative association between changes in accruals and operating cash flows. Therefore, consistent with Leuz et al. (2003), the following hypothesis is formed:

H02: There is a significant negative association between operating cash flow and earnings management.

2.2.3 Firm Size

Firm size is widely used as a control variable when it comes to detect earnings management. Abed et al. (2012) find a negative relation between firm size and earnings management. They argue that larger firms are subject to more governor from directors than smaller firms and therefore, reducing executives' tendency toward manage earnings. Accordingly, it is expected that smaller firms are more involved in earnings management practices compared to larger firms. In line with previous studies (Abed et al., 2012 and Xu & Ji, 2016), the following hypothesis is formed:

H03: There is a significant negative association between firm size and earnings management.

2.2.4 Negative Earnings

Burgstahler and Dichev (1997) provide evidence that U.S. managers use accounting discretion in order to evade reporting small losses, but, due to the limited reporting discretion that managers have, they are unable to report profits when large losses occurs. Similarly, Roychowdhury (2006) finds evidence that managers use various techniques to manipulate earnings, in order to meet specific financial reporting requirements to avoid reporting annual losses. Particularly, his evidence suggests that managers offer price discounts to temporarily increase the reported sales, they also reduce discretionary expenses in order to improve the reported margins, and overproduce to decrease the cost of goods sold. Therefore, it is expected that firm's negative earnings is positively associated with earnings management. Consistent with Roychowdhury (2006), the following hypothesis is formed:

H04: There is a significant positive association between negative earnings (losses) and earnings management.

2.2.5 Leverage

Leverage, as a measure of financial risk, is potentially associated with financial distress. Press and Weintrop (1990) find that high leverage is associated with nearing to the violation of debt covenants. To prevent this kind of violations, managers of highly leveraged firms have stronger incentives to upwardly manage earnings. On the other hand, Deangelo and Skinner (1994) suggest the opposite direction of managing earnings, they concluded that troubled firms have large negative accruals linked to contractual renegotiations that provide motives to downwardly manage earnings. In any case, it is expected that high leverage ratio increases earnings management, whether its upward or downward increase. Thus, the following hypothesis is formulated:

H05: There is a significant positive association between leverage and earnings management

3. Data and Methodology

3.1 Sample and Data Sources

The study sample starts with all firms listed on ASE of industrial and services sectors during the period of 2005 to 2012. These sectors considered a good representative sample for the ASE because it represents about two-third (67%) of the overall firms working in all sectors in Jordan's capital market, In addition to its high impact on the economic growth. To be included in the study sample firms must have a complete record of all variables

employed in the analysis, all observations that do not have a complete record of all variables are excluded. Some observations were dropped from the analysis because the required data are not included in some firm's annual reports. This case is possible due to missing information on firms that either stopped working, merged or changed its core business during the study period. Therefore, after the removal of outliers and extreme values, the final sample of this study consists of 71 firms (568 firm-year observations) covering 2005-2012, which is appropriate period of time to capture the impact of financial crisis on earnings management. In line with previous studies, this study considers 2008 and 2009 as the financial crisis years. In this paper, the required information is hand collected from various sources. Most of the financial, accounting and other data are obtained mainly from the firm's annual reports. Financial reports are a reliable source of data for public companies as they are audited externally. Some other data are obtained from Amman Stock Exchange website.

3.2 Variables Definition

Most prior studies have used three discretionary accrual measures as proxies for earnings management. The first proxy is the absolute value of discretionary accruals (where accruals are the difference between income before extraordinary items and operating cash flow), the second one is the special items (calculated as the absolute value of special items scaled by prior year total assets), and the last proxy for earnings management is the deferred tax (tax expense scaled by prior year total assets). As supported by Bartov et al. (2001), and consistent with prior studies (Al-Fayoumi et al., 2010; Mollik et al., 2013; Xu and Ji, 2016 and Costa, 2016), the dependent variable (discretionary accruals) for the purposes of this study has been measured using a cross-sectional version of the modified Jones model as follows: First, total accruals (TACC) are the difference between net income before extraordinary items (NI) and operating cash flow (OCF):

$$\text{TACC} = \text{NI} - \text{OCF} \quad (1)$$

Second, non-discretionary accruals (NDA), are total accruals (TACC) minus discretionary accruals (DACC). To estimate the coefficient values, an OLS regression with no intercept is employed, equation (2) below is estimated for each firm and fiscal year combination:

$$\text{TACC}_{it}/A_{it-1} = \beta_0 [1/A_{it-1}] + \beta_1 [(\Delta R_{it} - \Delta AR_{it})/A_{it-1}] + \beta_2 [\text{PPE}_{it}/A_{it-1}] + \varepsilon_{it} \quad (2)$$

where TACC is total accruals, A is total assets, ΔR is the change in revenues, ΔAR is the change in account receivables, PPE is the level of plant, property, and equipment. t and $t-1$ are time subscripts and i is the firm subscript. Finally, abnormal accruals equal the difference between actual and normal accruals, in other words, the difference between total accruals (TACC) and the non-discretionary components of accruals (NDA) is considered as discretionary accruals (DACC) as stated below:

$$\widehat{\text{DACC}}_{it}/A_{it-1} = (\text{TACC}_{it}/A_{it-1}) - (\widehat{\beta}_0 [1/A_{it-1}] + \widehat{\beta}_1 [(\Delta R_{it} - \Delta AR_{it})/A_{it-1}] + \widehat{\beta}_2 [\text{PPE}_{it}/A_{it-1}]) \quad (3)$$

where hats denote estimated values from equation (2), $\widehat{\text{DACC}}_{it}$ is discretionary accruals for firm i in year t , TACC is total accruals, A_{it-1} denotes total assets at the beginning of the year for firm i , ΔR denotes change in revenues, ΔAR is the change in accounts receivable and PPE denotes property, plant and equipment for firm i in year t . All variables in equations (2) and (3), including the intercept in equation 2- are scaled by prior year total assets (total assets at the beginning of the year), to control for heteroscedasticity (cross-sectional differences in firms size). Accordingly, to measure propensities for earnings management, the absolute value of discretionary accruals will be used.

3.3 Independent and Control Variables

- Financial Crisis (CRIS): indicator variable that equals one during financial crisis years (2008 and 2009); zero otherwise.
- Industry Indicator (D1): indicator variable that equals one if the firm belongs to the industrial sector; zero otherwise.
- Cash Flow from Operations (OCF): operating cash flow scaled by the book value of lagged total assets.
- Firm Size (SIZE): natural logarithm of the fiscal year-end value of total assets.
- Negative Earnings (NEG): indicator variable that equals one when a firm has negative earnings (losses); zero otherwise.
- Leverage (LEV): total debt to total assets.

3.4 Model

To model earnings management as a function of the global financial crisis and the control variables, an approach similar to Mollik et al. (2013) will be applied, the following specification will be used:

$$\text{DACC} = \beta_0 + \beta_1 \text{CRIS} + \beta_2 \text{OCF} + \beta_3 \text{SIZE} + \beta_4 \text{NEG} + \beta_5 \text{LEV} + u_i + \varepsilon_{it} \quad (4)$$

Where:

- DACC: the absolute value of discretionary accruals; a proxy for earnings management,
- CRIS: dummy variable that equals one during financial crisis years (2008 and 2009); zero otherwise,
- OCF: operating cash flow for the firm deflated by the book value of lagged total assets,
- SIZE: is the firm size; measured as logarithmic transformation of the fiscal year-end value of total assets,
- NEG: is the current year losses; dummy variable that equals one if negative income (loss) is experienced in the current year; zero otherwise, a proxy for firm's financial health,
- LEV: is the firm leverage ratio; a measure of financial risk, calculated as total debt to total assets,
- u_i : is the individual firm-specific effects,
- ε : Error term,
- $\beta_0 \dots \beta_5$: Regression coefficients, t is time subscript and i is the firm subscript.

Fixed effects at the industry level will be estimated, this is accomplished by including dummy variables for all sectors with except for one sector. This model includes an industry indicator variable (D1) that takes the value of one if the firm belongs to the industrial sector and zero otherwise. In addition, individual firm's effects are included to allow for company heterogeneity. Finally, the expected relations between variables are as follows: If financial crisis is associated with more (less) effective monitoring, β_1 is likely to be negative (positive). β_2 is expected to be negative because managers are willing to take advantage of the accounting discretion to give a brighter picture of firm's performance, therefore, it is expected that less cash flows from operating activities increases managers incentives to manage earnings. β_3 is expected to be negative because larger firms are subject to more governor from directors than smaller firms and therefore, larger firms are less involved in earnings management practices. β_4 is expected to be positive because managers of firms with negative earnings have stronger incentives to manipulate their financial statements in order to hide the negative impact of their projects. β_5 is expected to be positive because higher debt triggers managers incentives to manage earnings, in order to prevent the violation of debt agreements and to show a margin of safety to the creditors.

3.5 Research Limitation

One limitation of the analysis model, in my opinion, is that it ignores an important variable that potentially affects earnings management in Jordan; which is audit committee. Failure to monitor managers effectively gives them an opportunity to hide information about their activities through providing minimal disclosure. During the study period, firms were not obligated by law to disclose enough information -beyond the mandated minimum requirements- about its audit committees and audit committees characteristics, such as audit committee size, level of independence, number of annual meetings, shares owned by its members, their financial expertise, etc. Therefore, and due to lack of available data, audit committee characteristics' variables were dropped from the analysis. Which is considered as a drawback of the model, when it comes to detect earnings management.

4. Results

4.1 Descriptive Statistics

Table 1 below documents the summary statistics on discretionary accruals for the nonfinancial firms listed on ASE during the period of 2005-2012 by sector.

Table 1. Descriptive statistics – by sector

Variable	Panel (A) Services Sector					
	Mean	Median	Max.	Min.	S. D.	N
DACC	0.078	0.043	1.100	0.000	0.118	256
CRIS	0.250	0	1	0	0.434	256
OCF	0.423	0.209	3.320	- 1.766	0.734	256
SIZE	7.480	7.410	8.902	6.091	0.590	256
NEG	0.152	0	1	0	0.360	256
LEV	0.328	0.281	0.975	0.010	0.221	256
Panel (B) Industrial Sector						
DACC	0.087	0.057	1.317	0.001	0.114	312
CRIS	0.250	0	1	0	0.434	312
OCF	0.274	0.129	4.120	- 2.579	0.752	312
SIZE	7.317	7.215	9.186	5.933	0.646	312
NEG	0.244	0	1	0	0.430	312
LEV	0.323	0.299	0.945	0.015	0.208	312

Note. DACC = the absolute value of the difference between total accruals and the non-discretionary components of accruals, CRIS = dummy variable that equals to 1 during financial crisis and 0 otherwise, OCF = cash flow from operating activities scaled by the book value of lagged total assets, SIZE = the natural logarithm of the firm's fiscal year-end total assets, NEG = dummy variable that equals to 1 if loss is occurred in the current year and 0 otherwise, LEV = total debt to total assets.

Source: Author calculations.

Panel A of Table 1 reports the descriptive statistics for the 32 sample firms (256 firm-year observations) listed on ASE of services sector during the study Eight years period. It shows that, on average services firms have a discretionary accruals of 7.8 percent, ranged from a minimum of almost 0 to a maximum of 1.1. The standard deviation of discretionary accruals is 11.8 percent. Financial crisis dummy variable for services sector firms has a mean value of 0.25 and a standard deviation of 43.4 percent. Cash flow from operations ranges from a minimum of -1.766 to a maximum value of 3.32, with an average of 0.423, measuring the amount of cash generated by a firm's normal business operations relative to its lagged total assets. The average debt to assets ratio is 32.8 percent, showing services firm's leverage, while the size of services firms has an average logarithm of total assets equals 7.48. Current year losses dummy variable has a standard deviation of 36 percent with an average of 0.152, indicating that about 15% of the services firms included in the study sample suffered a loss in one or more years during the study period. The descriptive statistics for the 39 sample firms (312 firm-year observations) listed on ASE of industrial sector during the period of the study are shown in Panel B of Table 1. It reports that, on average industrial firms have a discretionary accruals of 8.7 percent, ranged from a minimum of almost 0 to a maximum of 1.317. The standard deviation of discretionary accruals is 11.4 percent. Financial crisis dummy variable for industrial sector firms has a mean value of 0.25 and a standard deviation of 43.4 percent. Operating cash flow varies between a minimum of -2.579 and a maximum value of 4.12, with an average of 27.4 percent. The average debt to assets ratio is 32.3 percent, while the size of industrial firms has an average logarithm of total assets equals 7.317. Negative earnings dummy variable has an average of 0.244 and a standard deviation of 43 percent. Overall, Table 1 reveals that earnings management practices in Jordanian nonfinancial firms are relatively small, even smaller in the services sector (discretionary accruals have an average of 8.7 percent for industrial sector, and 7.8 percent for services sector).

Table 1 also shows a high standard deviation of operating cash flow for both sectors (73.4 percent for services sector, and 75.2 percent for industrial sector) relative to the standard deviation of other variables included in the study, this high standard deviation of operating cash flow may indicate that firms included in the study are of different size and maturity. This is supported by the high standard deviation of firm size (59 percent for services sector, and 64.6 percent for industrial sector), and this justifies the inclusion of firm size and cash flow from operations in the analysis model. The reported mean of leverage ratio for services firms (0.328) is slightly higher than for industrial firms (0.323), which suggests that services firms rely more on debt to finance their assets. However, services firms have witnessed less negative income than industrial firms in one or more years during the study period, since current year losses dummy variable for services firms has an average of about 15 percent, while it averaged almost 25 percent for industrial firms. Finally, it is noteworthy that there is no apparent difference between services and industrial firms in terms of financial crisis. Financial crisis dummy variable typically has the same statistics (an average of 0.25 and a standard deviation of 0.434) for both sectors. The next table; Table 2 provides a descriptive statistics for the variables used in the analysis. It documents the summary

statistics on discretionary accruals for the sampled firms during the period of 2005-2012. The final sample consists of 71 firms (568 firm-year observations) listed on ASE of services and industrial sectors (32 services firm and 39 industrial firm).

Table 2. Descriptive statistics – full sample

Variable	Full Sample					
	Mean	Median	Max.	Min.	S. D.	N
DACC	0.083	0.051	1.317	0.000	0.116	568
CRIS	0.250	0	1	0	0.433	568
OCF	0.341	0.163	4.120	- 2.579	0.747	568
SIZE	7.391	7.338	9.186	5.933	0.626	568
NEG	0.202	0	1	0	0.402	568
LEV	0.325	0.291	0.975	0.010	0.214	568

Note. DACC = the absolute value of the difference between total accruals and the non-discretionary components of accruals, CRIS = dummy variable that equals to 1 during financial crisis and 0 otherwise, OCF = cash flow from operating activities scaled by the book value of lagged total assets, SIZE = the natural logarithm of the firm's fiscal year-end total assets, NEG = dummy variable that equals to 1 if loss is occurred in the current year and 0 otherwise, LEV = total debt to total assets.

Source: Author calculations.

Table 2 shows that, on average nonfinancial listed firms have a discretionary accruals of 8.3 percent, ranged from a minimum of almost 0 to a maximum of 1.317. The standard deviation of discretionary accruals is about 12 percent, showing the spread in earnings management. This result is consistent with Al-Mohareb and Alkhalaileh (2019), they report an average discretionary accruals of 10 percent, with a standard deviation of about 9 percent. Financial crisis dummy variable, as depicted by the selected sample, has an average of 0.25 and a standard deviation of 43.3 percent. Moreover, cash flow from operations has an average of 34.1 percent, ranged from a minimum of -2.579 to a maximum value of 4.12, the negative amount of operating cash flow could be attributed to several reasons, such as; high cost of sales, decrease in revenues and the changes in working capital (e.g., inventory, accounts receivables and accounts payable). More importantly; leverage ratio has a mean value of 32.5 percent, with a standard deviation of 21.4 percent, which is close to the amount reported by Al-Fayoumi et al. (2010) and Alkhalaileh (2016). This suggests that Jordanian nonfinancial listed firms, in general, are not highly leveraged. Apparently; firms do not depend heavily on debt to finance their assets. However, the size of nonfinancial firms has an average logarithm of total assets equals 7.391, with standard deviation of 62.6 percent. Finally, Current year losses (negative income) dummy variable has a standard deviation of 40.2 percent with an average of 0.202, indicating that about 20% of the nonfinancial listed firms included in the study sample suffered a loss in one or more years during the study period. Negative income (loss) occurs when the firm's expenses exceeds its revenues.

4.2 Correlation Results

Pairwise correlation coefficients between variables are shown in Table 3 below. It shows the correlation matrix for the variables used in this study.

Table 3. Pearson Correlations Matrix^a

Variable	DACC	CRIS	OCF	SIZE	NEG	LEV
DACC	1					
CRIS	- 0.034	1				
OCF	- 0.180***	0.069	1			
SIZE	- 0.177***	0.018	0.115***	1		
NEG	0.048	0.063	- 0.218***	- 0.254***	1	
LEV	0.109***	0.022	- 0.346***	0.327***	0.145***	1

Note. DACC = the absolute value of the difference between total accruals and the non-discretionary components of accruals, CRIS = dummy variable that equals to 1 during financial crisis and 0 otherwise, OCF = cash flow from operating activities scaled by the book value of lagged total assets, SIZE = the natural logarithm of the firm's fiscal year-end total assets, NEG = dummy variable that equals to 1 if loss is occurred in the current year and 0 otherwise, LEV = total debt to total assets. a. Listwise N= 568 *** denotes significant at the 1% level (2-tailed).

Source: Author calculations.

Pearson correlation matrix shows significant pairwise correlations between some explanatory variables, the significant correlation between these variables is noteworthy. First, current year losses and leverage are positively correlated with each other and negatively correlated with operating cash flow at 1% significant level. NEG is positively correlated with LEV implies that if the firm's loss increases, its leverage ratio also increase. Loss occurs when the firm has more expenses than revenues, troubled firms are in more need of funds in order to cover their losses and to avoid reporting annual losses. Therefore, troubled firms tend to borrow more. The negative correlation between OCF and NEG suggests that if the firm's operating cash flow increases, its losses decrease. Since cash flow from operations activity contributes in covering firm's expenses, which will decrease its losses (if any), and reduce firm's need for borrowing. Therefore, the negative correlation between OCF and LEV exists.

Second, firm size is negatively correlated with current year losses, and positively correlated with both leverage and cash flow from operations at 1% level of significance. The negative correlation between SIZE and NEG suggests that larger firms seem to be more healthy firms, since they are less likely to suffer a loss (negative income). The positive correlation between SIZE and LEV can be attributed to the fact that larger firms have the capacity for borrowing and have higher leverage constraint levels, as they have more tangible collaterals. The positive correlation between SIZE and OCF may be due to the higher level of operating activities for larger firms than for smaller firms.

Finally, operating cash flow and firm size are both negatively correlated with the absolute value of discretionary accruals, whereas the latter is positively correlated with leverage at 1% level of significance. OCF has a negative correlation with DACC implies that if cash flow from operations increases, firm's discretionary accruals decrease. Accounting accruals mitigate cash flow shocks and cause a negative correlation between changes in accruals and operating cash flows. SIZE is negatively correlated with DACC provides initial support for the study's proposition that larger firms are less involved in earnings management practices compared to smaller firms, because larger firms are subject to more governor from directors than smaller firms and therefore, reducing executives' tendency toward manage earnings. The positive correlation between LEV and DACC indicates that high leverage is associated with nearing to the violation of debt covenants, to prevent this kind of violations, managers of highly leveraged firms have stronger incentives to manage earnings.

As for the independent variable, Table 3 does not record any association between financial crisis and any of the control variables. However, it reports a negative insignificant correlation between financial crisis and discretionary accruals. This indicates that financial crisis has a negligible impact on earnings management. In general, the correlation results indicate that the magnitude of correlations does not, mostly, exceed 0.20 and therefore, the relations between variables appear small. The control variables (OCF, SIZE, NEG and LEV) are significantly but not highly or moderately correlated. The lowest correlation coefficient (0.115) is between SIZE and OCF, while the highest correlation coefficient (-0.346) is between LEV and OCF.

4.3 Empirical Results

To examine the impact of financial crisis on earnings management, the regression equation presented earlier has been used. Table 4 below shows the estimated results of the OLS regression model for the full sample.

Table 4. OLS regression result – full sample (dependent variable: *DACC*)

Independent Variables	Coefficient	Std. Error	t-Statistic	P > t
<i>C</i>	0.377	0.062	6.081	0.000
<i>CRIS</i>	- 0.006	0.011	- 0.540	0.589
<i>OCF</i>	- 0.017	0.007	- 2.450	0.015
<i>SIZE</i>	- 0.042	0.009	- 4.875	0.000
<i>NEG</i>	- 0.016	0.013	- 1.261	0.208
<i>LEV</i>	0.083	0.026	3.192	0.002
<i>DI</i>	0.001	0.010	0.117	0.907

Adjusted R- Square = 0.065; N =568

F= 7.603, Prob. > F = 0.000

Note. DACC = the absolute value of the difference between total accruals and the non-discretionary components of accruals, CRIS = dummy variable that equals to 1 during financial crisis and 0 otherwise, OCF = cash flow from operating activities scaled by the book value of lagged total assets, SIZE = the natural logarithm of the firm's fiscal year-end total assets, NEG = dummy variable that equals to 1 if loss is occurred in the current year and 0 otherwise, LEV = total debt to total assets, DI= dummy variable equals to 1 if the firm belongs to the industrial sector and 0 otherwise.

Table 4 gives the OLS regression results. It shows that the Adjusted R-Square value equals 0.065 which means that 6.50 % of the overall variation in discretionary accruals are explained by the variables in the model. The significant predictors are operating cash flow (at 5% level of significance), firm size and leverage (at 1% significant level). The coefficient values were -0.017, -0.042 and 0.083 respectively.

The estimated results show a significant negative relationship between cash flow from operations and discretionary accruals. These statistics are not surprising due to the fact that managers, by using their accounting discretion, may speed up the recording of future revenues or postpone reporting current costs in their reports, with a view to alleviate economic shocks' impact and/or conceal the firm's poor performance. Leuz et al. (2003) find that accounting accruals smooth cash flow shocks and result in a negative association between changes in accruals and operating cash flows. The fact that firm size coefficient is negative indicates that larger firms are less involved in earnings management practices compared to smaller firms, because larger firms are closely screened and monitored by analysts and investors, therefore, smoothed income signals from larger firms add little value, accordingly; managers of such firms have less incentive to manipulate earnings. This finding is consistent with Xu and Ji (2016) and Dayak and Al-Mughrabi (2020).

Table 4 also illustrates that there is a significant positive relationship exists between leverage and discretionary accruals, which indicates that managers of highly leveraged firms have stronger incentives to manage earnings. Managers are willing to adopt more aggressive earnings management techniques to hide the negative impact of projects from lenders and investors. Moreover, since high leverage is associated with nearing to the violation of debt covenants, to prevent such violations, managers resort to manage earnings. This result is lower than the result reported by Alkhalailah (2016), who reports a significant positive leverage coefficient of 0.135.

Surprisingly, current year losses has a statistically insignificant negative relationship with discretionary accruals, which implies that firm's discretionary accruals are not affected by the occurrence of loss. This result may be due to the fact that manager's rewards and compensations in Jordanian listed firms, are not tied to the firm's financial performance. Therefore, managers have less incentives to increase the reported earnings, when current period earnings are low. This finding is inconsistent with Roychowdhury (2006), who finds evidence that managers use various techniques to manipulate earnings, in order to meet specific financial reporting requirements to avoid reporting annual losses.

Finally, none of the independent variables has been found to have a statistically significant effect on discretionary accruals. Financial crisis has an insignificant negative relationship with earnings management, indicating that there is a small and negligible role for crisis in manipulating earnings. Financial crisis, in general, has a lesser impact on Jordanian market than the rest of the world, one possible explanation is the lack of modern financial instruments, such as derivatives, in ASE. However, there is an insignificant positive relationship between the industry indicator (D1) and discretionary accruals, indicating that financial crisis effect does not vary among different sectors. This may be interpreted as that the firm's industry identity does not affect its earnings management behavior, which is inconsistent with prior studies (Tse & Tucker, 2009 and Karuna et al., 2012), who find that the volatility in earnings management practices across firms depends strongly on industry factors.

It is difficult to compare firms in two different sectors in terms of their operating cash flow and leverage due to the differences in their size and composition of debt and equity. Therefore, the regression analysis includes industry effects. Ideally, one would perform the analysis for each sector by itself. However, as the size of the sample decreases sharply for each sub-sample, this study runs the analysis for all sectors using industry effects, in addition to performing the analysis for each sector by itself. The estimated results of the OLS regression model for each sector separately are shown below in Table 5.

Table 5. OLS regression results – by sector (dependent variable: DACC)

Independent Variables	Services Sector	Industrial Sector
C	0.563*** (5.488)	0.280*** (3.666)
CRIS	- 0.023 (- 1.405)	0.007 (0.455)
OCF	- 0.014 (- 1.292)	- 0.019** (- 2.010)
SIZE	- 0.068*** (- 4.741)	- 0.028*** (- 2.598)
NEG	- 0.032 (- 1.502)	- 0.008 (- 0.508)
LEV	0.128*** (3.303)	0.054 (1.510)
Adjusted R-Square	0.108	0.036
F-Statistic	7.144 Prob. > F = 0.000	3.290 Prob. > F = 0.007
Number of Observations	256	312

Notes. (i) *DACC* = the absolute value of the difference between total accruals and the non-discretionary components of accruals, *CRIS* = dummy variable that equals to 1 during financial crisis and 0 otherwise, *OCF* = cash flow from operating activities scaled by the book value of lagged total assets, *SIZE* = the natural logarithm of the firm's fiscal year-end total assets, *NEG* = dummy variable that equals to 1 if loss is occurred in the current year and 0 otherwise, *LEV* = total debt to total assets. (ii) t-Statistic in brackets. (iii) *** and ** denote significance at the 0.01 and 0.05 level respectively.

The first column of Table 5 summarizes the estimated results of the regression model for services sector. It shows that the Adjusted R-Square value equals 0.108 which means that 10.8 % of the overall variation in discretionary accruals for services firms are explained by the variables in the model. The significant predictors are firm size and leverage (at 1 % level of significance). The regression coefficients values were -0.068 and 0.128 respectively. All other explanatory variables do not have any significant relationship with earnings management. These results are consistent with the results found in the full sample regression model (presented earlier in Table 4). However, financial crisis, operating cash flow and current year losses have been found to have a statistically insignificant negative effect on discretionary accruals.

The last column of Table 5 reports the estimated results of the regression model for industrial sector. It shows that, compared to the services sector, the Adjusted R-Square value is sharply decreased (0.036) which means that only 3.6 % of the overall variation in discretionary accruals for industrial firms are explained by the variables in the model. The significant predictors are cash flow from operations (at 5% level of significance) and firm size (at 1% significant level). The regression coefficients values were -0.019 and -0.028 respectively. All other explanatory variables do not have any significant relationship with earnings management. Again, these results are consistent with the results found in the full sample regression model (presented earlier in Table 4). However, financial crisis and leverage have been found to have a statistically insignificant positive effect on discretionary accruals, while current year losses has an insignificant negative effect on discretionary accruals. In general, Table 5 demonstrates that financial crisis has an insignificant negative relation with discretionary accruals for the services sector, while an insignificant positive relation exists for the industrial sector. This result suggests that industrial firms engaged in more earnings management practices during the financial crisis than services firms. Since firms in industrial sector have less cash flow from operating activities than firms in services sector (as presented earlier in Table 1), which supports the findings that operating cash flow is negatively and significantly correlated with discretionary accruals for the industrial sector firms, while for the services sector firms it is not.

Table 5 also shows that for the services sector, leverage is positively and significantly correlated with discretionary accruals (at 1% significant level), same relationship exists in the industrial sector but the significance level disappears. This result supports the findings that managers of firms with high leverage ratio have stronger incentives to involve in earnings management practices, in order to evade violation of debt covenant, since firms in services sector are more leveraged than firms in industrial sector (as reported earlier in Table 1). Moreover, Table 5 reveals that, among all variables in the study, firm size has kept its significant negative relation with discretionary accruals across both sectors, which is supported by the finding that firms in

both sectors almost have the same size (as reported earlier in Table 1). This suggests that firm size plays an important part in affecting earnings management practices across firms, which is consistent with this study prediction.

Finally, current year losses dummy variable has kept its insignificant negative relation with discretionary accruals across both sectors. This suggests that the occurrence of a loss or a negative income in a firm does not affect the attitude of its earnings management, which is inconsistent with this study prediction. In summary, results reported in Table 5 indicate that there are no differences between the two sectors, services and industrial, in term of the association between financial crisis and earnings management.

5. Conclusions

This paper investigated earnings management in Jordan during the global financial crisis for a sample of nonfinancial listed firms during the period of 2005-2012 using panel data analysis. The empirical results provided evidence that earnings management practices in Jordan are relatively small, even smaller in services sector. I find a conclusive evidence that larger firms are less involved in earnings management practices compared to smaller firms. Earnings management signals from larger firms add little value, accordingly, managers of such firms have less motives to manage earnings.

The analysis in this paper indicates that firm's operating cash flow is negatively and significantly associated with discretionary accruals, positing that accounting accruals mitigate cash flow shocks and result in a negative association between changes in accruals and operating cash flows. However, the findings suggest a positive significant effect of leverage on discretionary accruals. The fact that the coefficient of leverage is positive indicates that managers in more leveraged firms are more likely to adopt aggressive earnings management techniques to show a margin of safety to their creditors and to avoid debt covenants violation. This result is consistent with Dayak and Al-Mughrabi (2020). Surprisingly, inconsistent with the study prediction and the "big bath" hypothesis introduced by Healy (1985), the results revealed that Jordanian nonfinancial listed firms did not engage in a greater level of earnings management during the financial crisis period. In addition, the analysis in this paper fails to link firm's current year losses to discretionary accruals. I believe this result is due to the fact that managers' rewards and compensations in Jordanian listed firms are not tied to the firm's financial performance. Therefore, managers have less incentives to increase the reported earnings during the financial crisis, when the firm's current period earnings are low. I also believe that, as higher debt is involved in higher discretionary accruals, listed firms, especially financially distressed firms, should rely more on equity instead of debt to finance their assets and to cover any potential losses, which will reduce managers' motives to manipulate earnings.

Overall, the findings of this study raise questions regarding the validity of the modified Jones model and whether or not different models (such as Deangelo, 1986) should be used in future studies regarding earnings management. Perhaps the most important area for future research is on the effect of ownership type (e.g., widely-held firms, state-controlled firm, privately-controlled firms) on managing earnings in Jordanian firms. In addition, the role of audit committees in reducing earnings management is an avenue for more research, another avenue is the interaction between performance measures and earnings management.

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Note

Note 1. Jordan's stock market (hence; ASE) was established in 1978 making it one of the oldest and largest stock market in the MENA region. In addition, the ASE has many features similar to other markets in the MENA region such as ownership structure and corporate governance mechanisms. Therefore, the results can be generalized to MENA countries.

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